

Application Serial Number 10/522046
Response to Office Action dated 9/24/2007

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended) A glass for laser processing that can be laser-processed by causing ablation or evaporation by laser beam energy absorbed therein,
wherein the glass for laser processing has a composition that comprises
at least one selected from the group consisting of SiO₂ and B₂O₃ as a network forming oxide,
at least one selected from the group consisting of Al₂O₃ and TiO₂ as an intermediate oxide, and
at least one selected from the group consisting of Li₂O, Na₂O, K₂O, Rb₂O, Cs₂O, MgO, CaO, SrO and BaO as a modifier oxide,
satisfies the following conditions:
 $60 \leq \text{SiO}_2 + \text{B}_2\text{O}_3 \leq 79 \text{ mol\%};$
 $5 \leq \text{Al}_2\text{O}_3 + \text{TiO}_2 \leq 20 \text{ mol\%};$ and
 $5 \leq \text{Li}_2\text{O} + \text{Na}_2\text{O} + \text{K}_2\text{O} + \text{Rb}_2\text{O} + \text{Cs}_2\text{O} + \text{MgO} + \text{CaO} + \text{SrO} + \text{BaO} \leq 20 \text{ mol\%},$
where $5 \leq \text{TiO}_2 \leq 20 \text{ mol\%}$ and $10 \text{ mol\%} \leq \text{Na}_2\text{O},$
the composition is substantially uniform in a direction of thickness of the glass, and
the glass for laser processing has processing threshold values of 60 mW or lower at a wavelength of 266 nm and 500 mW or lower at a wavelength of 355 nm, where the processing threshold values denote energy used at the limit of causing ablation.

2. (Original) The glass for laser processing according to claim 1, wherein the composition satisfies the following condition:

$$(\text{Al}_2\text{O}_3 + \text{TiO}_2) / (\text{Li}_2\text{O} + \text{Na}_2\text{O} + \text{K}_2\text{O} + \text{Rb}_2\text{O} + \text{Cs}_2\text{O} + \text{MgO} + \text{CaO} + \text{SrO} + \text{BaO}) \leq 0.9.$$

Application Serial Number 10/522046
Response to Office Action dated 9/24/2007

3. (Original) The glass for laser processing according to claim 1, wherein the composition satisfies the following conditions:

$$70 \leq \text{SiO}_2 + \text{B}_2\text{O}_3 \leq 79 \text{ mol\%};$$

$$10 \leq \text{TiO}_2 \leq 15 \text{ mol\%}; \text{ and}$$

$$10 \leq \text{Na}_2\text{O} \leq 15 \text{ mol\%}.$$

4. (Canceled)

5. (Original) The glass for laser processing according to claim 1, wherein the glass for laser processing has a thermal expansion coefficient of $100 \times 10^{-7} \text{ }^\circ\text{C}^{-1}$ or lower.

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (New) The glass for laser processing according to claim 1, wherein the composition of the glass for laser processing comprises each of SiO_2 , B_2O_3 , TiO_2 and Na_2O .

12. (New) A glass for laser processing according to claim 1, wherein the glass for laser processing has a composition that consists essentially of:

at least one selected from the group consisting of SiO_2 and B_2O_3 as a network forming oxide,

Application Serial Number 10/522046
Response to Office Action dated 9/24/2007

at least one selected from the group consisting of Al_2O_3 and TiO_2 as an intermediate oxide, and

at least one selected from the group consisting of Li_2O , Na_2O , K_2O , Rb_2O , Cs_2O , MgO , CaO , SrO and BaO as a modifier oxide.

13. (New) A laser processing method of a glass that has a composition that comprises at least one selected from the group consisting of SiO_2 and B_2O_3 as a network forming oxide,

at least one selected from the group consisting of Al_2O_3 and TiO_2 as an intermediate oxide, and

at least one selected from the group consisting of Li_2O , Na_2O , K_2O , Rb_2O , Cs_2O , MgO , CaO , SrO and BaO as a modifier oxide,

satisfies the following conditions:

$$60 \leq \text{SiO}_2 + \text{B}_2\text{O}_3 \leq 79 \text{ mol\%};$$

$$10 \leq \text{Al}_2\text{O}_3 + \text{TiO}_2 \leq 20 \text{ mol\%}; \text{ and}$$

$$5 \leq \text{Li}_2\text{O} + \text{Na}_2\text{O} + \text{K}_2\text{O} + \text{Rb}_2\text{O} + \text{Cs}_2\text{O} + \text{MgO} + \text{CaO} + \text{SrO} + \text{BaO} \leq 20 \text{ mol\%},$$

where $10 \leq \text{TiO}_2 \leq 20 \text{ mol\%}$ and $10 \text{ mol\%} \leq \text{Na}_2\text{O}$,

the composition is substantially uniform in a direction of thickness of the glass,

the method comprising:

processing the glass by irradiation with a laser beam,

where the laser beam is selected from the group consisting of laser beams with wavelength of 266 nm of a Nd:YAG laser, of 355 nm of a Nd:YAG laser and of 248 nm of a KrF excimer laser.